REMARKS/ARGUMENTS

The rejections presented in the Office Action dated October 13, 2006 (hereinafter Office Action) have been considered. Claims 1-63 remain pending in the application. Reconsideration of the pending claims and allowance of the application in view of the present response is respectfully requested.

Claims 1, 3-4, 6, 8-9, 11-12, 15, 17-30, 32, 34-39, 41-42, 45-47, 52, 55-57, 59 and 61-62 stand rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 6,456,881 to *Bornzin et al.* (hereinafter *"Bornzin"*).

To anticipate a claim, the asserted reference must clearly and unequivocally disclose every element of the claimed invention. A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. The identical invention must be shown in as complete detail as is contained in the claim. All claim elements, and their limitations, must be found in the prior art reference to maintain a rejection based on 35 U.S.C. §102.

Applicant respectfully disagrees with the Examiner's characterization of *Bornzin* and the contention that *Bornzin* anticipates these claims. Nevertheless, to expedite allowance of the application, independent claims to 1, 15, 35, 39, 52, 57, 59, and 62 to have been amended. Specifically, Applicant has amended the claims to enhance an understanding that detection of fusion or discrimination between fusion, capture and non-capture is performed, according to Applicant's invention, using only a single cardiac signal.

Applicant's independent claims 1, 15, 39, 57, and 59 recite, in some form, an approach for discriminating between different types of cardiac pacing responses using only a single cardiac signal sensed from a vector that is different from the pacing vector. *Bornzin*, in contrast teaches a two channel approach to discriminating between capture, fusion and non-capture. *Bornzin*'s process involves sensing cardiac signals from both a ventricular channel and an atrial channel (see, Figure 3, element 310). If the ventricular channel signal indicates non-capture, the atrial channel signal is analyzed. Discrimination between non-capture and fusion is determined based on the atrial channel signal. In the process described by *Bornzin*, discrimination between fusion and capture cannot be made

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using only a single signal. *Bornzin* teaches that both the ventricular and atrial EGMs are analyzed to classify the cardiac response between three possible cardiac responses to the pacing pulse – capture, non-capture, and fusion.

According to the Office Action on page 16, *Bornzin* describes using the atrial signal alone to distinguish between fusion and non-capture. However, as stated in the Office Action on page 16, the ventricular EGM is used to confirm capture. *Bornzin* does not teach or suggest classifying between three possible cardiac responses using only a single cardiac signal. Although *Bornzin* can use a single atrial signal to discriminate between non-capture and fusion, the ventricular signal must additionally be used to classify the cardiac response between the three responses -- capture, non-capture and fusion. Thus, *Bornzin* teaches that two signals must be used to classify the cardiac response as one of capture, non-capture or fusion as opposed to the single signal approach recited in Applicant's claims. For at least these reasons, independent claims 1, 15, 39, 57, and 59, and all claims dependent therefrom are not anticipated by *Bornzin*.

Independent claims 35, 52, and 62 recite in some form detecting or classifying fusion based only on a single cardiac signal. As discussed above, *Bornzin* teaches that both the ventricular and atrial EGM are used to detect fusion. Without the ventricular EGM, *Bornzin's* process would be unable to detect fusion because of the inability to discern between a captured response and a fusion beat. Thus, independent claims 35, 52, and 62 and all claims dependent therefrom are not anticipated by *Bornzin*.

Regarding the rejection of independent claims 24 and 61, *Bornzin* does not teach or suggest several elements of these claims. For example, *Bornzin* does not teach or suggest the following elements that are recited in Applicant's claims 24 and 61: defining a plurality of classification windows relative to and subsequent to the pacing pulse, detecting a characteristic of the cardiac signal within a particular classification window of the plurality of classification windows, and classifying the cardiac response based on the detected characteristic and the particular classification window. The Office Action states that the "decision steps (i.e., sampling of the cardiac signals, examination of the ventricular signal, examination of the atrial signal) to be 'a plurality of classification windows relative to and

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subsequent to the pacing pulse.'" However, *Bornzin* does not mention a plurality of classification windows or detection of a cardiac signal characteristic within a particular one of the classification windows.

Further, *Bornzin* does not teach or suggest that classification of the cardiac response is based on the detected characteristic and the particular classification window in which the detected characteristic was detected. Because the teachings of *Bornzin* are devoid of any reference to multiple classification windows or to classification of the cardiac response based on signal characteristics detected within a particular one of the multiple classification windows, Applicant respectfully asserts that the Examiner's conclusion that *Bornzin* teaches these elements is based on improper hindsight reasoning using knowledge gleaned only from Applicants' disclosure.

The Office Action further relies on U.S. Patent No. 6,345,201 which the Examiner assumes was intended to be incorporated by reference. However, this reference is not incorporated by reference or is defectively incorporated by reference in the *Bornzin* patent. Further, the '201 patent also does not teach or suggest a plurality of classification windows or cardiac response classification based on signal characteristics detected within a particular one of the plurality of classification windows.

For at least the reasons discussed above, claims 24, 61, and all claims dependent thereon are not anticipated by *Bornzin*.

Claims 2, 16, 40, 53, 58 and 60 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Bornzin* in view of U.S. Patent No. 5,522,860 to *Molin et al.* (hereinafter *"Molin"*). Claims 5, 7, 31 and 33 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,456,881 to *Bornzin* in view of U.S. Patent No. 6,738,669 to *Sloman et al.* (hereinafter *"Sloman"*). Claims 10, 43, 44, 54 and 63 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Bornzin*. Claims 13, 14 and 48 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Bornzin* in view of *Sloman*. Claims 50 and 51 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Bornzin* in view of U.S. Patent No. 4,878,497 to *Callaghan et al.* (hereinafter *"Callaghan"*).

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Applicant respectfully assets that the cited combinations fail to support *prima facie* obviousness of the rejected claims. Three criteria must be met to establish a *prima facie* case of obviousness. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference. Second, there must be a reasonable expectation of success. Finally, the prior art reference, or combination of references, must teach or suggest all the claim limitations. MPEP § 2142.

Each of the rejections under 35 U.S.C. §103(a) rely on *Bornzin* as the primary reference and use additional references to supply missing features recited in Applicant's dependent claims. Applicant reasserts the arguments made above with respect to *Bornzin's* failure to teach or suggest the limitations of Applicant's independent claims. The dependent claims include all of the features of the independent claims from which they depend along with additional features. The third criterion of *prima facie* obviousness recited above requires that the prior art references upon which the rejection is based must teach or suggest all of the claim limitations. The reference combinations cited in the above rejections fail to support *prima facie* obviousness, at least because the combinations do not teach or suggest all of the claim limitations of the independent claims which are incorporated as elements of the rejected dependent claims. Thus, these dependent claims are patentable over the asserted combinations.

Applicant notes that with regard to claims 10, 43, 44 and 54, the Examiner states that various features would have been a matter of design choice because, according to the Examiner, the Applicant "has not disclosed that [the feature] solves any stated problem or is for any particular purpose." There is no requirement that the Applicant must state an advantage for each feature recited in the claims.

Notwithstanding the immediately preceding paragraph, the disclosure includes various advantages for the use of shock channel or coil electrodes for sensing. The Office Action states on page 16 that Applicant's previous Office Action response pointed to the discussion on page 22 relating to temporal separation of the cardiac response signal and the pacing artifact signal that can be achieved using a sensing vector that is different from the

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pacing vector. The Office Action states that this does not specifically discuss advantages for the use of the shock channel. However, sensing with the shock channel provides the advantage of temporal separation from the pacing vector.

Claims 24, 28, 38 41 and 56 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 11 of copending application no. 10/734,599. Claims 24-34, 38, 41 and 56 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-94 of copending application no. 10/733,869.

Applicant respectfully asserts that, in view of the amendments to the claims and arguments made above, the Examiner is compelled to withdraw the substantive art rejections of the claims. Once withdrawn, the only rejection remaining in the subject application is the provisional obviousness-type double patenting rejections. In view of MPEP § 804 I(B), Applicant respectfully requests that the provisional obviousness-type double patenting rejections be withdrawn and that the subject application be permitted to issue as a patent.

It is to be understood that Applicant does not acquiesce to Examiner's characterization of the asserted art or Applicant's claimed subject matter, nor of the Examiner's application of the asserted art or combinations thereof to Applicant's claimed subject matter. Moreover, Applicant does not acquiesce to the Examiner's statements or conclusions concerning what would have been obvious to one of ordinary skill in the art, obvious design choices, common knowledge at the time of Applicant's invention, officially noticed facts, and the like. Applicant reserves the right to address in detail the Examiner's characterizations, conclusions, and rejections in future prosecution.

Authorization is given to charge Deposit Account No. 50-3581 (GUID.160PA) any necessary fees for this filing. If the Examiner believes it necessary or helpful, the undersigned attorney of record invites the Examiner to contact her to discuss any issues related to this case.

Respectfully submitted,

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